[Geochemical Analysis & Lab]

EXPERIMENT 3: Preparation for Water Sample Collection

**Preparation**:

* pH meter (with a temperature probe), conductivity meter, ORP meter (or just ORP probe with a potentiometer)
* Buffer solutions (pH 4 and 7), Conductivity calibration solution (1000S KCl solution), Zobell solution
* Filter, filter membrane (pore size 0.2 and 0.45 m), hand vacuum pump
* Beakers(250ml, 500ml), washing bottles, forceps

**Procedures:**

1. pH meter(Schott handylab pH-11) calibration
   1. Connect the electrode to the meter(note insert it to the pH and T probe jacks).
   2. Turn on the pH meter .
   3. Press the <CAL> key repeatedly until the display ASY and the function display ConCal appears.
   4. Immerse the pH electrode in the first buffer solution (pH 7.0 ± 0.5 in two-point calibration).
   5. Press the <RUN/ENTER> key. The measured pH value appears on the display.
   6. Set the measured value to the nominal pH value of the buffer solution (at the current temperature) with <▲> <▼>.
   7. Press the <RUN/ENTER> key. The value of the asymmetry (mV) and the sensor symbol appear on the display.
   8. Press the <RUN/ENTER> key. SLO appears on the display.
   9. To continue the two-point calibration, thoroughly rinse the electrode with deionized water.
   10. Immerse the pH electrode in the second buffer solution (pH 4.0 ± 0.5).
   11. Press the <RUN/ENTER> key. The second pH value appears on the display.
   12. Set the measured value to the nominal pH value of the buffer solution (at the current temperature) with <▲> <▼>.
   13. When the measured value is stable, press the <RUN/ENTER> key. The value of the slope (mV/pH) appears on the display. The probe symbol shows the evaluation of the current calibration.
   14. Press the <RUN/ENTER> key. The value of the asymmetry (mV) appears on the display.
   15. To return to the measuring mode: Press the <M> key.
2. Conductivity meter (Schott handylab LF 12) calibration
   1. Connect the conductivity measuring cell to the measuring instrument.
   2. Turn on the instrument.
   3. Select the measuring mode with <X>.
   4. Decant YSI calibration solution (cond.=1,000S) into a 250mL clean bottle.
   5. Immerse the conductivity measuring cell in the calibration solution.
   6. Press the <X> key until X appears on the status display and read the stabilized conductivity (k).
   7. Calculate the cell constant by C=1,000/k (measured in step f).
   8. Press the <CAL> key repeatedly until CELL appears on the display.
   9. Press the <RUN/ENTER> key.
   10. Press the <CAL> repeatedly until the adjustable cell constant.
   11. Set the cell constant to the value C (in step g) to be used with <▲> <▼>.

1. ORP (oxidation-reduction probe) calibration
   1. Connect ORP probe to a potentiometer (Cole Parmer Digisense potentiometer)
   2. Immerse the probe in the Zobell solution
   3. Read the potential (V). It is supposed to be 231 mV.
   4. V= 230-V
   5. Add always V to the measured values
2. Filtering apparatuses
   1. Check if you have all the parts of the filtering apparatuses.
   2. Place filter membrane and test if there is any leak when you do filtering with a hand vacuum pump.

**Notes:**